

**Figure 1:**

Amino acid sequences of Cpn60 and Cpn10:

SEQ ID No 1: Cpn10 (encoded by nucleotides pos. 458-751 of Figure 2):

MKIRPLHDRVRRKEETATAGGIILPGAAAEKPNQGVVISVGTGRILDNGSVQALA  
VNEGDVVVFGKYSGQNTIDIDGEELLILNESDIYGVLEA

SEQ ID No 2: Cpn60 (encoded by nucleotides pos. 800-2446 of Figure 2):

MAAKDVLFGDSARAKMLVGVNILDVVRVTLGPKGRNVVIEKSFGAPIITKDGVSV  
REIELKDKFENMGAQMVKEVASQANDQAGDGTATTATVLAQAIIEGLKSVAAGMNP  
MDLKRIGDKATAAVVAAIKEQAQPCLDTKAIAQVGTISANADETVGRLIAEAMEKVG  
KEGVITVEEGKGLEDELVDVEGMQFDRGYLSPYFINNQEKMTVEMENPLILLVDKKI  
DNLQELLPILENAKSGRPLLIVAEDVEGQALATLVVNNLRGTFKVA AVKAPGFGDR  
RKAMLQDLAILTGGQVISEELGMSLETADPSSLGTASKVVIDKENTVIVDGAGTEASV  
NTRVDQIRAEIESSTSDYDIEKLQERVAKLGGVAVIKVGAGSEMEMKEKKDRVDDA  
LHATRAAVEEGVVAGGGVALIRALSSVTVVGDNEDQNVGIALALRAMEAPIRQIAGN  
AGAEGSVVVDKVKSGTGSFGFNASTGEYGDMIAMGILDPKAVTRSSLQAAASIAGL  
MITTEAMVADAPVEEGAGGMPDMGGMGGMGMPGMM

**Figure 2:**

SEQ ID No 3: DNA coding for Cpn60 and Cpn10:

Cpn10, pos. 458-751

Cpn60, pos. 800-2446

atcaaaaaatgcagcaaggacagattcctgccaagaattagcagaagggttctttagcactggccggcgcttattattaacgccgg  
gtttgtcactgatgcgctgggttttacattactcgtccccgcgacgcgtaaacggttggtccataagggtgattgcatttattaccctc  
gcatgatgactgcaagcagcttcaagcgacgggtagttttcaggaaggctcgtttaaatgtacattcgcacactgactcgcaaagca  
gtcatgaaaaaatcacaattgaaggcgaatataccaagacgataagtaggtatttttcggctagccgttgaaatcctagtaaaagccc

cgataaattaaccatctatttttcacagaggcaatttagcctttgtttaccttattgatcctaatacttgggatccaacagttggagagtctagc  
aaatgaaaatccgtccattacatgatcgtattgtgttcgccgtaaagaagaagagaccgcaactgcgggtggtatttttacc  
ggcgctgcggcagaaaaaccaaataaggtgtttatctctgtgggtactggccgtattcttgataatggttcagtgcgaagcgtggc  
ggftaacgaaggcgtattgtcgttttggtaatactcagggtcaaaatactatcgatcgtggtgaagaattattgattttgaatga  
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tattatttgggtgatagcgacgcgcaaaaatgttggttaggtgtaaacattttagccgacgcagtaagagttaccttaggacctaa  
aggctgtaacgttgttatagaaaaatcatttgggtgcaccgatcatcaccaaagatggtgtttctgttgcgcgtgaaatcgaattgaaagaca  
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aagacgagcttgatgtttagaaggcatgcagttcgatcgcggttacttgtctccgtacttcatcaacaaccaagaaaaaatgaccgtag  
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gtccattattgatcgttgcgaagatgttgaaggccaagcactagcaacattggtagtaaacacttgcgcggcacattcaaggttgc  
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ctagggtgtctttagaaactgcggatccttcttcttgggtacggcaagcagggtgttatcgataaagaaaacaccgtgattgttga  
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tgtaactagctggcctataatgttgagttcctctgggtggcatgatctcatggtacttcaacttaagcctgattcactgcg  
gccttaacagtaaaaataaacgcaacgtagaacaataaagcgtatggcattaatgaagacggctgcatttaattcagatc

**Figure 3:**

SEQ ID No 4: Amino acid sequence of esterase cloned from *Oleispira antarctica* (EstRB8):

EstRB8 (encoded by nucleotides 1145 to 2143 Frame 2 of Figure 4) 333 aa

MKNTLKSSSRFSLKQLGTGALISSLFFGGCTTTQQDNLYTGVM SLARDSAGLEVKTA  
SAGDVNLTYMERQGSDDNAESVILLHGFSADKDNWILFTKEFDEKYHVIAVDLAG  
HGDSEQLLTDDYGLIKQAERLDIFLSGLGVNSFHIAGNSMGG AISAIYSLSHPEKVKSL  
TLIDAAGVDGDTESEYYKVLAEKG NPLIATDEASFEYRMGFTMTQPPFLPWPLRPSLL  
RKTLARAEINN KIFSDMLKTKERLGMTNFQQKIEVKMAQHPLPTLIMWGKEDRVLD  
VSAAA AFKKIIPQATVHIFPEVGHLPMVEIPSES AKVYEEFLSSIK

**Figure 4:**

SEQ ID No 5: DNA fragment from plasmid pBK1Est coding for esterase of *Oleispira antarctica* (EstRB8):

Nucleotide positions 1-100 correspond to reverse complement of positions 1196-1121 and 3799-3939 correspond to reverse complement of 1043-952 of pBK-CMV vector (Stratagene).

Positions 101-105 are *Bam*HI – *Sau*3A1 fusion and positions 3795-3798 are *Sau*3A1-*Bam*HI-fusion.

acaggaaacagctatgacctgattacgccaaagctcgaaattaaccctcactaaagggaacaaaagctggagctcgcgcgcctgcag  
gtcgacactagtggatcaacggcgttcattggtactggctgagctcagcgtcataatgccgatgcgatactggcgcgtcagctgagctact  
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gtcaccaacaatcaatcaaacaccaataccaatcgcaaaaactcataaaactagccgatcaccaaatcccaaaagcgttcaaaaatgaa  
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aaagtcgttaattcactggccttttggcgtatccgcaccttcacatagaaattagtaattggcatgctactggcctttaaaaagaatcagtttaatt  
gaagaaacctcgttatctcagccattaccgctgtagccgaatttgcgcttatcctcagccatgattaaactgacgccaatataataagac  
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gctctgattatctccagtttgttctcgggtgttgaccacaacacaacaagataatttatacacaggggttatgtctcttgcgagagacagc  
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ccaaattattcaacgaccaagctctgcggtaaaatcgagtggttcttgttttcatcaacagcaacaaacgtgaataccccgtaatcg  
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aatagtggttttgatacgegtttcgtgcgaataatacttctctgctaagagttgcggatggcacaataaactcgttgattaagatta  
ataataaatagttaacagtataattgaactgagggctgaagaactctaatacctctgaagaacttgaggccgctagagagaaaagacca  
gtgataatattcatcttgccatgagagcttatcatgaaagcctgtgcttaaaatcaatcattatatttattcatctttaaattgaaataataccaat  
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gctgcaacacatgccctagcgtctaaagtagcacgcacaacactggccagtcgtactagcccccttgcgattcgtgcagacgagcaac  
aagcgtatttaaacttacctaaatttctaaccaccaccattggttctttccacaaactcaaaaaactcgtcaaatccgcttgcaatttaaacg  
cgatgacatagatctaatecgattatcaaacccgattcaagcgtcattaaaaacgcaccactggcaagaagttctacctgcactgacca  
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aagaaatfaacgccaaccacatacgcggtgttctccggcatagtactggcacagcaacgctagtacacaaaggaagaacctccca  
gatttgggaaattcgcatcgttaacgatccaaagaattcaaaaagcttctcagagacttctagagcgccgcggggcccatcgattttcc  
accgggtgggggtaccaggttaagtgtacccaattcgcctatagtgaagtcgtattacaattcactggccgtcgttttac

**Figure 5:**

Amino acid sequences expressed from vector pBK1CpnEst: - the co-expression of fragments encoding native chaperonines with the esterase gene (EstRB8), all from *Oleispira antarctica*

SEQ ID No 6: cpn10 (nucleotides 113 to 403: Frame 2 of Figure 6) 97 aa:

MKIRPLHDRVRRKEEETATAGGILPGAAAEKPNQGVVISVGTGRILDNGSVQALA  
VNEG DVVVF GKYS GQNTIDIDGEELLILNESDIYGVLEA

SEQ ID No 7: cpn60 (nucleotides 455 to 2098: Frame 2 of Figure 6) 548 aa:

MAAKDVLFGDSARAKMLVGVN ILADAVRVT LGPKGRNVVIEKSFGAPIITKDGVSV A  
REIELKDKFENMGAQM VKEVASQANDQAGDGT TATVLAQAIISEGLKSVAAGMNP  
MDLKR GIDKATAAVVAAIKEQAQPCLDTKAIAQVGTISANA DETVGR LIAEAMEKVG  
KEGVITVEEGKGLEDEL DVVEGMQFDRGYLSPYFINNQE KMTVEMENPLILLVDKKI  
DNLQELLPILE NVAKSGRPLLIVAEDVEGQALATLVVNNLRGTFKVA AVKAPGFGDR  
RKAMLQDLAILTGGQVISEELGMSLETADPSSLGTASKVVIDKENTVIVDGAGTEASV  
NTRVDQIRAEIESSTSDYDIEKLQERVA KLAGGVAVIKVGAGSEMEMKEKKDRVDDA  
LHATRAAVEEGVVAGGGVALIRALSSVTTVVGDNEDQNVGIALALRAMEAPIRQIAGN  
AGAEGSVVVDKVKSGTGSFGFNASTGEYGDMIAMGILDP AKVTRSSLQAAASIAGL  
MITTEAMVADAPVEEGAGGMPDMGGMGGMGGMGMPGMM

SEQ ID No 8: estRB8 (nucleotides 2579 to 3577: Frame 2 of Figure 6) 333 aa:

MKNTLKSSSRFSLKQLGTGALISSLFFGGCTTTQQDNLYTGVM SLARDSAGLEVKTA  
SAGDVNLTYMERQGS DKDNAESVILLHGFSADKDNWILFTKEFDEKYHVIAVDLAG  
HGDSEQLLT TDYGLIKQAERLDIFLSGLGVNSFH IAGNSMGG AISAIYSLSHPEKVKSL  
TLIDAAGVDGDTESEYYKVLAEGKNPLIATDEASFEYRMGFTMTQPPFLPWPLRPSLL  
RKTLARAEINN KIFSDMLKTKERLGMTNFQQKIEVKMAQHPLPTLIMWGKEDRVLD  
VSAAA AFKKIIPQATVHIFPEVGH LPMVEIPSESAKVYEEFLSSIK

**Figure 6:**

SEQ ID No 9: pBK1CpnEst: - the fusion of native chaperonine-coding fragments with  
esterase of *Oleispira antarctica* (EstRB8)

The DNA fragment coding for Cpn10 and Cpn60 is flanked by *Sac*I site (pos. 69-75) and *Sal*I site (encoded by pos. 2138-2143 of Figure 7):

Nucleotide positions 1-75 correspond to reverse complement of positions 1196-1121 and positions 5233-5273 correspond to reverse complement of 1043-952 of pBK-CMV vector (Stratagene)

Small letters – the Cpn10-Cpn60 encoding fragment,

Capital italics – fragments of vector pBK-CMV

Capital letters – fragment coding for EstRB8 from plasmid pBK1Est

*ACAGGAAACAGCTATGACCTTGATTACGCCAAGCTCGAAATTAACCCTCACTAAAGGGA*  
*ACAAAAGCTGGAGCTC*ctaatacttgggatccaacagttggagagcttagcaaatgaaaatccgtccattacatgatcgtatt  
gttcttcgccgttaaagaagaagagaccgcaactgcgggttggtatttttaccgggcgtgcggcagaaaaacaaatcaagggtgtgt  
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agggtcaaaatactatcgatcgcgttggaagaaattatgattttgaatgaaagtgaatctacggcggtttagaagcttaattattacactca  
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aacattggtagtaaacacttgcgcggcacattcaagggtgcagcggtaaaagcccctgggtttggcgatcgtcgtaaagcgatgttgca  
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Replacement Sheet

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AAACACCAATACCAATCGCAAAAACCTCATAAACTAGCCGATCACCAAATCCCA  
AAAGCGTTCAAAAATGAAACGAGCACGTCACACAAAATCAATTTATACGCTAAC  
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CAAAGATAATGCCGAAAGCGTTATTTTATTACACGGTTTCTCTGCTGATAAAGAT  
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TTTAGCGGGACATGGCGATTTCAGAACAAATTATTAACGACTGATTACGGTCTCATA  
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TATGTGGGGCAAAGAAGATCGCGTTCTTGACGTATCCGCAGCAGCGGCCTTCAAA  
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Replacement Sheet

CAGTGGGTTTCTTGTTTTTCATCAACAGCAACAAACGTGAAATACCCCGTAATCGC  
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CCCTAGCGTCTAAAGTAGCACGCACAACACTGGCCAGTCGTAAGTACCTTTTGC  
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GCAACGCTAGTACACAAAGGAAGAACCTCCCAGATTTGGGAAATTCGCATCGTTA  
ACGATCCAAAGAATTCAAAAAGCTTCTCGAGAGTACTTCTAGAGCGGCCGCGGGCCCA  
TCGATTTTCCACCCGGGTGGGGTACCAGGTAAGTGTACCCAATTCGCCCTATAGTGAGT  
CGTATTACAATTCCTGGCCGTCGTTTTAC



**Figure 7:**

Amino acid sequences expressed from vector pBK1CpnSREst: - the co-expression of the stabilized single ring mutant chaperonin with the esterase gene (EstRB8) from *Oleispira antarctica* (cpn10::stabilized single ring mutant Glu460Ala/Ser462Ala/Val463Ala::est)

SEQ ID No 10: cpn10 (nucleotides 113 to 403: Frame 2 of Figure 8) 97 aa:

MKIRPLHDRVRRKEETATAGGIILPGAAAEKPNQGVVISVGTGRILDNGSVQALA  
VNEGDVVVFGKYSGQNTIDIDGEELLILNESDIYGVLEA

Below – ***Capital bold letters*** are the mutations introduced

SEQ ID No 11: stabilized single ring mutant of cpn60 (nucleotides 455 to 2098: Frame 2 of Figure 8) 548 aa:

MAAKDVLFGDSARAKMLVGVN~~L~~ADAVRVT**L**GPKGRNVVIEKSFGAPIITKDGVSV  
REIELKDKFENMGAQM**V**KEVASQANDQAGDGT**T**TATVLAQAI**S**EGLKSVAAGMNP  
MDLKR**G**IDKATAAVVAAI**K**EQAQPCLDTKAIAQVGTISANA**D**ETVGR**L**IAEAMEKVG  
KEGVITVEEGKGLEDEL**D**VVEGMQFDRGYLSPYFIN**N**QEKMTVEMENPLILLVDK**K**I  
DNLQELLPILEN**V**AKSGRPLL**V**AEDVEGQALATLVVNNLRGTFK**V**AAVKAPGFGDR  
RKAMLQDLAILTGGQVISEELGMSLETADPSSLG**T**ASKVVIDKENTVIVDGAGTEASV  
NTRVDQIRAEIESSTSDYDIEKLQERVAKLAGGVAVIKVGAGSEMEMKEKKDRVDDA  
LHATRAAVEEGVVAGGGVALIRALSSVT**V**VGDNEDQNVGIALALRAMEAPIRQIAGN  
AGA**A**G**A**AVVDKVKSGTGSFGFNASTGEYGD**M**IAMGIL**D**PAKVTRSSLQAAASIAGL  
MITTEAMVADAPVEEGAGGMPDMGGMGGMGMPGMM

SEQ ID No 12: EstRB8 (nucleotides 2579 to 3577: Frame 2 of Figure 8) 333 aa:

MKNTLKSSSRFSLKQLGTGALIISS**L**FFGGCTTTQQDNLYTG**V**MSLARDSAGLEV**K**TA  
SAGDVNLT**Y**MERQGS**D**KDNAESVILLHGFSADKDNWILFTKEFDEKYHVIAVDLAG  
HGDSEQLLT**D**YGLIKQAERLDIFLSGLGVNSFHIAGNSMGGAISAIYSLSHPEKV**K**SL  
TLIDAAGVDGDTESEY**K**VLAEGKNPLIATDEASFEYRMGFTMTQPPFLPWPLRPSLL

RKTLARAEINNKIFSDMLKTKERLGMTNFQKIEVKMAQHPLPTLIMWGKEDRVLD  
VSAAAFKKIIPQATVHIFPEVGHLPMEIPSESAKVYEEFLSSIK

**Figure 8:**

SEQ ID No 13: DNA sequence of vector pBK1CpnSREst: the expression cassette for the co-expression of the stabilized single ring mutant chaperonin with the esterase gene (EstRB8) from *Oleispira antarctica* (cpn10::stabilized single ring mutant Glu460Ala/Ser462Ala/Val463Ala::est)

Nucleotide positions 1-75 correspond to reverse complement of positions 1196-1121 and positions 5233-5273 correspond to reverse complement of 1043-952 of pBK-CMV vector (Stratagene)

DNA fragment coding for Cpn10 and Cpn60 is flanked by *SacI* site (pos. 69-75) and *SalI* site (pos. 2138-2143).

In the DNA sequence:

Small letters – the Cpn10-Cpn60 coding fragment,

Capital italics – fragments of vector

Capital letters – fragment coding for EstRB8 from plasmid pBK1Est

Capital bold letters = introduced mutations

*ACAGGAAACAGCTATGACCTTGATTACGCCAAGCTCGAAATTAACCCTCACTAAAGGGA*  
*ACAAAAGCTGGAGCTC*cctaacttgggatccaacagttggagagctagcaaatgaaaatccgtccattacatgatcgtatt  
gttcttcgccgtaaagaagaagagaccgcaactgcgggtggtattttaccggcgctgcggcagaaaaacaaatcaagggtgtgt  
tatctctgtgggtactggccgtattcttgataatggttcagtgaagcgctggcggtaacgaaggcgatgtgtcgttttgtaaatactc  
aggcctaaatactatcgatcgatggtgaagaattattgatttgaatgaaagtgaatctacggcggtttagaagcttaattattacactca  
cttttttatttaacctacaaaatttaaggaaagatcatggctgctaaagacgtattatttggatagcgcacgcgcgcaaaaatgttggttaggt  
gtaaacatttttagccgacgcagtaagagttaccttaggacctaaaggctgaacgttgttatagaaaaatcatttgggtgcaccgatcatcac  
caaagatggtgtttctgttcgcgtgaaatcgaattgaagacaaatcgaaaacatgggcgcacagatggttaaggaggtgcttctca  
agccaacgaccaagccggtgacggcacaacgacagcgactgtactagcacaggcgattatcagcgaaggcttgaatctgttgccg  
ctggcatgaatccaatggatcttaaacgtggtattgataaagctacggctgctgtgttgcgccattaaagaacaagctcagccttgcttg

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[illegible]

TACCTTGGCCACTAAGACCTTCTTTATTACGTAAAACGCTAGCCCGTGCCGAGATC  
AATAACAAAATTTTTTCCGATATGCTGAAAACCAAAGAACGTTTAGGAATGACTA  
ACTTTCAACAGAAAATTGAAGTGAAAATGGCTCAACATCCATTGCCAACACTGAT  
TATGTGGGGCAAAGAAGATCGCGTTCTTGACGTATCCGCAGCAGCGGCCTTCAAA  
AAAATAATTCCACAAGCAACTGTTTCATATTTTTTCTGAAGTAGGCCACCTACCTAT  
GGTAGAAATTCCTAGTGAAAGCGCTAAAGTTTATGAAGAGTTTTTGTCTCTATTA  
AATAAGAGCACATAATCATGACTGACTTATAAACAGCCAAGCATTTAAAATGCTT  
GGCTGTTTATTTTAATGGCCAAATTATTCAACGACCAAGCTCTGCGGTAAAATCG  
CAGTGGGTTTCTTGTTTTTCATCAACAGCAACAAACGTGAAATACCCCGTAATCGC  
ATTTTCTGATTATCAAAATACATACTTTCCACCAGCATATTAACCTTCAACTTTTA  
AACTCGTCCGCCCTACCTCTATAACACTGGCAGTCAATTGACAATGGTACCTGC  
GGGAACAGGATGCTTAAAATCGATTGATCACTGCTGACGGTTACGATGCTTTGT  
CGAGAAAAACGAGTCGCTGCAATAAAAGAAACCTCATCCATCCACTGCATTGCA  
GTGCCACCGAATAACGTATCATGATGATTTGTTGTCTCTGGAAATACCGCTTTAGA  
AATAGTGGTTTTTGTATACGCGCTTTCGCTGCGCAATAATATCTTCTCTGCTAAGAG  
TTGCGGATGGCATAACATAAACTCGCTTGATTAAGATTAATAATAAATAGTTAACA  
GTATATTGAACTGAGGGTCTGAAGAACTCTAATACCTCTGAAGAACTTTGAGGCC  
GCTAGAGAGAAAAGACCAGTGATAATTTTCATCTTGCCATGAGAGCTTATCATG  
AAAGCCTGTGCTTAAAATCAATCATTATATTTATTCATCTTTAATTGAAATAATAC  
CAATATATTTTCATATATAATTTACACTACCCTTATCTCACTAGACTTCCCGCGCA  
TAGGCGCAAACAATCAACGCAAGTTCACAATAAAGCGGTTTCGCTGCAACACATG  
CCCTAGCGTCTAAAGTAGCACGCACAACACTGGCCAGTCGTACTAGCCCCTTTGC  
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AACGCACCACTGGCAAGAAGTTCTACCTGCACTGACCAATATGCAAGCGGCGGC  
GGAAGAGCTGCCTTTGATCGATCAAGAAGAAGGGAGCAGCAAAGAGGAAAACA  
ATCAAAAAGAGGAGAGCAATCAAATAAAAACGAGTTATTGAGGATTTTAATTTTA  
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AATAAATAGAGGTATACCATGTCAAACATCTGGTTTGAAGTACCAAAGATTGAAG  
TATTAAACCGTCAAATGGAAAATACTGCCTGCAGCAACTTAGGCATTCAAATTAC  
AGAAATTGGCGATGATTATATCACTGGCACAATGCCAGCAGATGCACGTACCTTC  
CAGCCAATGGGACTGATTCATGGCGGCTCAAATGTATTGCTGGCAGAAACACTGG  
GCAGCATGGCAGCTAACTGCTGTATTAATTTGTCTCAAGAATATTGTGTTGGCCA

AGAAATTAACGCCAACACATACGCGGTGTTTCGTTCCGGCATAGTGACTGGCACA  
GCAACGCTAGTACACAAAGGAAGAACCTCCCAGATTTGGGAAATTCGCATCGTTA  
ACGATCCAAAGAATTCAAAAAGCTTCTCGAGAGTACTTCTAGAGCGGCCGCGGGCCCA  
TCGATTTTCCACCCGGGTGGGGTACCAGGTAAGTGTACCCAATTCGCCCTATAGTGAGT  
CGTATTACAATTCACTGGCCGTCGTTTTAC

**Figure 9:**

Amino acid sequence of the stabilized single ring mutant Glu460Ala/Ser462Ala/Val463Ala of Cpn60:

SEQ ID No 14: Cpn10 (nucleotides 458-751 of Figure 10):

MKIRPLHDRVRRKEETATAGGIILPGAAAEKPNQGVVISVGTGRILDNGSVQALA  
VNEGDVVVFGKYSGQNTIDIDGEELLILNESDIYGVLEA

SEQ ID No 15: Cpn60 (nucleotides 458-751 of Figure 10):

MAAKDVLFGDSARAKMLVGVNILDVVRVTLGPKGRNVVIEKSFGAPIITKDGVSV  
REIELKDKFENMGAQMVKEVASQANDQAGDGTATVLAQAIIEGLKSVAAGMNP  
MDLKRIGDKATAAVVAAIKEQAQPCLDTKAIAQVGTISANADETVGRLIAEAMEKVG  
KEGVITVEEGKGLEDELVDVEGMQFDRGYLSPYFINNQEKMVEMENPLILLVDKKI  
DNLQELLPILENVAKSGRPLLIVAEDVEGQALATLVVNNLRGTFKVAAVKAPGFGDR  
RKAMLQDLAILTGGQVISEELGMSLETADPSSLGTASKVVIDKENTVIVDGAGTEASV  
NTRVDQIRAEIESSTSDYDIEKLQERVAKLGGVAVIKVGAGSEMEMKEKKDRVDDA  
LHATRAAVEEGVVAGGGVALIRALSSVTVVGDNEDQNVGIALALRAMEAPIRQIAGN  
AGAAGA AVVDKVKSGTGSFGFNASTGEYGDMIAMGILDPKAVTRSSLQAAASIAGL  
MITTEAMVADAPVEEGAGGMPDMGGMGGMGMPGMM

**Figure 10:**

SEQ ID No 16: DNA sequence of the stabilized single ring mutant

Glu460Ala/Ser462Ala/Val463Ala:

In the DNA sequence:

Small letters – the Cpn10-Cpn60 coding fragment,

Big bold letters = introduced mutations

atcaaaaaatgcagcaaggacagattcctgcccagaattagcagaagggttctttagcactggccggcgcttattattaacgccgg  
gtttgtcactgatgcgctgggtttacattactcgtccccgcacgcgtaaagcgttggtccataagggtgattgcattattaccctc  
gcatgatgactgcaagcagcttcaagcgacgggtagtttcaggaaggctcgtttaagatgtacattcgacactgactcgaaagca  
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